
1.) Suppose we use the Euclidean algorithm to find gcd(6865114081, 2528784465). List the eight integer *quotients* we obtain (in order), as the pairs are reduced. And what is the gcd?

2.) Find a pair of three-digit decimal integers $m$ and $n$ so the fraction $\frac{m}{n}$ is *closest possible* to $\frac{6865114081}{2528784465}$.

3.) Find the real number $x$ whose continued-fraction expansion is $[1, 1, 1, 1, \ldots]$ (never ending). In other words $x = 1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \ddots}}}$. [Hint: $x$ is irrational.]

4.) Give the first eight convergents of $x$ from problem 3. What pattern do their numerators and denominators obey?